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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
08/648,676	05/16/96	LEADER	M 2227-006

EXAMINER

IM41/0707

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TITLE	ART UNIT	PAPER NUMBER
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1744

DATE MAILED: 07/07/98

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on 5-20-98

☒ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-17, 19-21 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
☐ Claim(s) _____ is/are allowed.
☒ Claim(s) 1-17, 19-21 is/are rejected.
☐ Claim(s) _____ is/are objected to.
☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.
☐ received in Application No. (Series Code/Serial Number) _____
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☐ Notice of Reference Cited, PTO-892
☐ Information Disclosure Statement(s), PTO-1449, Paper No(s): _____
☐ Interview Summary, PTO-413
☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

-SEE OFFICE ACTION ON THE FOLLOWING PAGES-

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The statement at line 1 of page 5 of the May 20, 1998 response has been construed as direction to cancel claim 22.

Claims 1-3, 6-13, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Betts et al in view of Knudson et al and Brown et al, with or without Europe '629.

Betts has been discussed in the previous Office action. Applicant's claims differ by calling for the sensors to have a diameter of 0.046 to 0.078 inch and the thru holes to be located directly under the sensors and to have a diameter of 0.002 to 0.006 inch.

Knudson discloses a substrate 112 having a thru hole 120 filled with a conductive material lying directly beneath a sensor electrode 116. See col. 7, line 62 to col. 8, line 13. At col. 5, line 32 an electrode dimension of about 2 mm diameter is set forth. Applicant's upper limit of the electrode dimension of 0.078 inch is about 2 mm.

Brown discloses a thru hole with a cross-section area of about 600 square microns, which translate to a diameter of about 30 microns, which value is very close to the 0.002 inch (about 50 microns) value of applicant. See col. 6, line 53.

Europe discloses thru hole 4 in layer 2 filled with a conductive material 3. The thru hole has a dimension of up to 100 microns. See col. 2, line 4 to col. 4, line 13; col. 6, line 47.

It would have been obvious for Betts to locate the thru holes directly beneath the sensors in view of the secondary references so as to permit the location of the conductors on the underside of the supporting substrate and shielded from any detrimental contact with an analyte that can lead to the corrosion of the conductors.

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It would also have been obvious for Betts to adopt the sensor and thru hole dimensions of the secondary references, because the incorporation of conventional features from analogous prior art is within the skill of the art. Further, it is well-settled that dimension is a matter of design choice. This is especially true when the differences in the dimensions are measured in microns, which are very small values. Applicant has not demonstrated any criticality or unexpected result from such a minute difference in dimensions.

Applicant argues that Brown does not show a thru hole in a substrate because 21 is the substrate in the patent and that layer 25 with the thru hole is not a substrate. As support for his position, applicant cites the Radio Shack Dictionary of Electronics for the definition of "substrate".

This argument is not persuasive. First, there is nothing in applicant's claim language of "substrate" that would define over layer 25 of Brown. As set forth in the Dictionary of Electronics, a substrate is a material that supports other elements such as electrical circuit components. Layer 25 in Brown can be considered as a support for elements 26 and 27. Second, regardless whether layer 25 of Brown is a "substrate" or not, it is a layer that has a thru hole which contains a conductor for a sensor. As such, the thru hole in layer 25 is totally analogous to applicant's thru hole.

Applicant similarly argues that Europe does not disclose thru holes in a "substrate". This argument is similarly not persuasive. Regardless whether layer 2 of Europe is a "substrate" in the

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technical sense, this layer has thru holes containing conductors with dimensions in the range recited by applicant.

Applicant further argues that there is no motivation to modify Betts by providing the thru holes directly under the sensors. This argument is also not persuasive. As discussed before, if the thru holes are spaced from the sensors, the conductors would have to be located on the analyte, or upper, side of the sensor substrate from the sensors to the thru holes. This would potentially expose the conductors to the corrosive tendency of the analyte. That is certainly motivation for placing the thru holes directly underneath the sensors.

Claims 4, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Betts et al in view of Knudson et al and Brown et al, with or without Europe '629 and Grubb.

Applicant argues that the elongated tubular electrode of Grubb can not be mounted on a planar surface of a substrate such as that of Betts. This argument is not persuasive. Grubb is merely relied on to show that gel electrolyte for electrolytic sensors is well-known. The shape of the Grubb electrode is really irrelevant.

Claims 14, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Betts et al in view of Knudson et al and Brown et al, with or without Europe '629, and Buzza.

Applicant argues that Buzza does not disclose a flow channel which has a dome shape that increases the volume about an oxygen sensor. This argument is not persuasive and appears to be based upon a misinterpretation of the Buzza patent. Element 18 is clearly an oxygen sensor (see col. 8, line 30). From figure 8 and col. 9, line 13 of Buzza, it is evident that the flow channel is in

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the form of a dome that certainly has a larger volume than the channel 278-276. This dome serves to accommodate the convex end 246 of oxygen sensor 18.

Claims 16, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Betts et al in view of Knudson et al and Brown et al, with or without Europe '629, and Pace '410 and Kuhn et al

Applicant argues that Pace and Kuhn do not suggest the directly under location of the thru holes. This argument is not persuasive in that these two references are not relied on to show the location of the thru holes. They are relied on merely to show that the various sensors recited in applicant's claim 16 are conventional.

Applicant also argues that Pace and Kuhn do not teach the dome shape of the flow channel. This argument is not understood, since these references are not relied on to show a dome shape. In fact, the claims in question (16, 17) do not even recite any such dome shape.

Claims 6, 20 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

It is still unclear what function is served by the third cell 1213. In this regard, the discussion on page 35 of the specification is not considered to be an adequate teaching as set forth in the previous Office action.

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Claims 6, 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The expression "a third cell" is vague. Only a reference cell has been previously set forth. If the reference cell is a first cell, there is still no recitation of a second cell. It makes no sense to go from a first to a third, without a second.

Co-pending applications SN 08/648,675; 08/648,694; 08/649,009 are related to the instant application. In the event this application ever becomes allowable, applicant presumably would submit terminal disclaimer(s) of any such copending applications that have become patents. Applicant should confirm his intention to do so in his next response.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

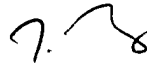
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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The examiner can be reached at 703-308-3329. His supervisor Robert Warden can be reached at 703-308-2920. Any inquiry of a general nature should be directed to the receptionist at 703-308-0661.



Ta Tung

Primary Examiner

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